

WHAT IS CLAIMED IS:

1. A pneumatic rubber tire with a carcass with circumferential rubber tread and associated sidewalls, wherein said tread and a portion of said sidewalls adjacent to said tread are of a lug and groove configuration designed to be ground-contacting, wherein said lug and groove configuration extends from said tread over at least thirty, alternatively at least fifty, percent of the tire sidewall adjacent to said tread, and alternately at least to a maximum section width of the tire, and wherein

5           (A) said lug and groove configured portion of said sidewall is of a rubber composition which comprises, based on 100 parts by weight rubber (phr),

10           (1) elastomers comprised of

15           (a) about 40 to about 80 phr of cis 1,4-polyisoprene natural rubber having a Tg in a range of about -65°C to about -75°C, and

20           (b) about 20 to about 60 phr of cis 1,4-polybutadiene rubber having a Tg in a range of about 100°C to about 106°C,

25           (2) about 40 to about 80 phr of reinforcing filler comprised of

30           (a) about 5 to about 40 phr of carbon black having an Iodine value (ASTM D1510) of about 35 to about 85 g/kg and a dibutylphthalate (DBP) value (ASTM D2414) of about 70 to about 130 cm<sup>3</sup>/100g, wherein said carbon black is exclusive of carbon blacks having an Iodine value of 106 g/kg or greater,

35           (b) about 10 to about 70 phr of aggregates of precipitated silica, wherein the weight ratio of silica to carbon black is in a range of about 0.3/1 to about 3/1, and

40           (c) about one to about 12 phr of starch/plasticizer composite which contains hydroxyl groups thereon comprised of a composite of starch and a plasticizer for said starch to reduce its softening point by at least about 10°C from a range of about 180°C to about 220°C to a range of about 110°C to about 170°C, and

45           (3) a coupling agent having a moiety reactive with hydroxyl (e.g. silanol groups) on the surface of said aggregates of precipitated silica and on the surface of said starch/plasticizer composite and another moiety interactive with said elastomer(s), and

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(B) said tread rubber of said circumferential tread, other than said rubber composition of said lug and groove configured sidewall, is comprised of, based on parts per 100 parts of rubber:

5                   (1) at least one diene-based elastomer selected from polymers of isoprene and/or 1,3-butadiene and copolymers of styrene with isoprene and/or 1,3-butadiene,

10                  (2) about 30 to about 95 phr of carbon black having an Iodine value in a range of about 100 to about 145 g/kg and a DBP value in a range of about 100 to about 145 cm<sup>3</sup>/100g, wherein said tread rubber composition is exclusive of precipitated silica, starch/plasticizer composite and coupling agent for said silica and starch/plasticizer composite and is exclusive of carbon black having an Iodine value in a range of from 35 to 85 g/kg together with a DBP value in a range of 70 to 130 cm<sup>3</sup>/100kg.

15                  2. The tire of claim 1 wherein, for said starch/plasticizer composite, the starch to plasticizer weight ratio is in a range of about 0.5/1 to about 4/1, so long as as the starch/plasticizer composite has the required softening point range of from about 110°C to about 170°C.

20                  3. The tire of claim 1 wherein said lug and groove configuration extends from said tread to over at least fifty percent of the tire sidewall adjacent to said tread.

25                  4. The tire of claim 2 wherein said lug and groove configuration extends from said tread to over at least fifty percent of the tire sidewall adjacent to said tread.

5. The tire of claim 1 wherein said lug and groove configuration extends from said tread over the tire sidewall adjacent to said tread to at least the maximum section width of the tire.

30                  6. The tire of claim 1 wherein said sidewall rubber composition is exclusive of elastomers having a Tg in a range of about -70°C and -100°C.

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7. The tire of claim 2 wherein said sidewall rubber composition is exclusive of elastomers having a Tg in a range of about -70°C and -100°C.

5 8. The tire of claim 1 wherein the carbon black reinforcing filler for said configured sidewall rubber composition is exclusive of carbon blacks having an Iodine value of 105 g/kg or greater.

10 9. The tire of claim 2 wherein the carbon black reinforcing filler for said configured sidewall rubber composition is exclusive of carbon blacks having an Iodine value of 105 g/kg or greater.

15 10. The tire of claim 6 wherein the carbon black reinforcing filler for said configured sidewall rubber composition is exclusive of carbon blacks having an Iodine value of 105 g/kg or greater.

11. The tire of claim 7 wherein the carbon black reinforcing filler for said configured sidewall rubber composition is exclusive of carbon blacks having an Iodine value of 105 g/kg or greater.

20 12. The tire of claim 1 wherein said configured sidewall rubber composition is exclusive of trans 1,4-polybutadiene, 3,4-polyisoprene, and high vinyl polybutadiene elastomer having a vinyl content of greater than fifty percent.

25 13. The tire of claim 2 wherein said configured sidewall rubber composition is exclusive of trans 1,4-polybutadiene, 3,4-polyisoprene, and high vinyl polybutadiene elastomer having a vinyl content of greater than fifty percent.

30 14. The tire of claim 7 wherein said configured sidewall rubber composition is exclusive of trans 1,4-polybutadiene, 3,4-polyisoprene, and high vinyl polybutadiene elastomer having a vinyl content of greater than fifty percent.

15. The tire of claim 1 wherein said sidewall rubber composition contains about 5 to about 15 phr of at least one additional elastomers selected from at least one of

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isoprene/butadiene copolymer rubber, synthetic cis 1,4-polyisoprene rubber and emulsion polymerization prepared styrene/butadiene copolymer rubber.

16. The tire of claim 2 wherein said sidewall rubber composition contains  
5 about 5 to about 15 phr of at least one additional elastomers selected from at least one of isoprene/butadiene copolymer rubber, synthetic cis 1,4-polyisoprene rubber and emulsion polymerization prepared styrene/butadiene copolymer rubber.

17. The tire of claim 7 wherein said sidewall rubber composition contains  
10 about 5 to about 15 phr of at least one additional elastomers selected from at least one of isoprene/butadiene copolymer rubber, synthetic cis 1,4-polyisoprene rubber and emulsion polymerization prepared styrene/butadiene copolymer rubber.

18. The tire of claim 1 wherein, for said configured sidewall composition,  
15 said coupling agent is a bis-(3-trialkoxysilylalkyl) polysulfide which contains from 2 to 8, with an average of from 2 to 2.6 or from 3.5 to 4 connecting sulfur atoms in its polysulfidic bridge.

19. The tire of claim 2 wherein, for said configured sidewall composition,  
20 said coupling agent is a bis-(3-trialkoxysilylalkyl) polysulfide which contains from 2 to 8, with an average of from 2 to 2.6 or from 3.5 to 4 connecting sulfur atoms in its polysulfidic bridge.

20. The tire of claim 19 wherein said coupling agent is a  
25 bis-(3-triethoxysilylpropyl) polysulfide.

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